

MANITOBA DEPARTMENT OF AGRICULTURE AND IMMIGRATION
Winnipeg, Canada.

A B C

OF MANITOBA WEEDS

A weed is like an uninvited guest who stealthily enters your house, jostles your family into the corners, snatches the food and drinks from your table, doubles the work of housekeeping, wears out your furniture, upsets your domestic routine, kills your prospect of prosperity, declares that he never will go away, and angrily orders you out of your own home.

WEEDS COMMISSION,
MANITOBA DEPARTMENT OF AGRICULTURE,
WINNIPEG, CANADA.

F O R E W O R D

"A B C of Manitoba Weeds" does not set out to deal exhaustively with any weed whatever. (The literature of the Manitoba Department of Agriculture includes several excellent circulars each of which treats rather fully some one weed that is of considerable importance). We have tried to avoid repetition of the matter presented in these other circulars. Neither does this "A B C" include even casual mention of ALL of Manitoba's weeds. It is not even claimed that the alphabetical method of discussion is assuredly the most logical.

It IS claimed, however, that some of the things said are relatively new, or at least that their truth is not widely known; that almost every person should be able to learn SOMETHING by reading the circular; that the weed problem is of tremendous importance; and that the system of presentation of information may be seen at a glance.

A LL weeds belong to one of three classes---Annuals, Biennials or Perennials. One of the first essentials in fighting any weed is to determine the class to which it belongs. The treatment must be prescribed on the basis of one's knowledge of the nature of the plant.

AMARANTH is the name of one of the very important classes of annual weeds. Red-root pigweed is the most important representative of the family. All the Amaranths bear a great profusion of small black seeds. Though there are several distinct species of Amaranths in Manitoba, most of the plants are grouped by the average person under the convenient general name of "Pigweed" or "Tumbleweed".

ANNUALS are plants that grow from seed, produce seed and die within one year. There are true annuals and overwintering annuals both in cereals and among weeds. In Manitoba the tame oat and the WILD OAT are true annuals. Fall Rye and Stinkweed are examples of Winter Annuals in cereals and weeds. The loss through annual weeds runs well into millions of dollars in Manitoba every year. The objective to be striven for in trying to control annuals is to induce the greatest possible number of seeds now in the soil to germinate, and then to kill the seedlings without permitting them to produce seeds of their own.

ANY weed that is now a pest in any part of the world which has a climate or soil similar to our own is liable to appear some day in Manitoba fields. Have your eyes open for newcomers.

ATLACIDE is a proprietary chemical, mostly composed of sodium chlorate, which is very effective in killing small patches of serious new perennial weeds. The cost would be considered prohibitive for large plots, but its use upon small patches is often to be advised.

B ARLEY (WILD), also called "Skunk-tail Grass", is a native perennial barley which thrives best on rather alkaline soils, and is most often seen about the edge of sloughs. It is a nuisance when cut in hay, as the barbed awns are liable to cause mouth trouble in animals.



Wild
Barley

BIENNIALS are two year plants. That is they grow rosettes of leaves the year of germination, and then produce seeds the year following. There are few important biennial weeds. Biennials are easy to control.

BINDWEED (FIELD) is the name of an imported small-flowered, very deep-rooted perennial Morning Glory which is one of the worst of weeds. It has invaded Manitoba in places, and should be carefully watched for. It is easily confused with Hedge Bindweed, a native, white-flowered Morning Glory, which also is a weed. Field Bindweed has very small blooms for a Morning Glory (about $\frac{3}{4}$ inch across and pink). It roots down about 10 feet. It twines about and climbs up other plants.



Field
Bindweed

BINDWEED (HEDGE). The Hedge Bindweed is a native, perennial white-flowered Morning Glory. It shows up most conspicuously along the gravelly edge of quite a number of the public highways, and is also seen sometimes in patches in summer-fallows. Actually it grows in many other places where it is less seen. The blooms are about $1\frac{1}{2}$ inches across. It is almost impossible to tell the plants of this native from the much worse imported Field Bindweed, but these differences may be pointed out: The flowers of the Field Bindweed are decidedly smaller and usually pink. The cup from which the colored part of the flower grows is very small in Field Bindweed while in the Hedge Bindweed there are bracts or leaf-like growths that are perhaps half an inch long. Also the Field Bindweed has two tiny leaves half way up the flower stem (or petiole), while these are absent from the native. Actually, though Hedge Bindweed is not easy to kill in summerfallow, it is much less a weed than its imported sister.

BLADDER CAMPION is a serious perennial which has spread considerably in some parts of Eastern Canada and has established itself in spots in Manitoba. The seeds are borne in capsules that are encased in bladder-like envelopes.



Bladder
Campion

BLANK spots in grain fields always become weed centres, so it is exceedingly important to avoid "misses" in drilling. Examination just before harvest of any field in which missed spots occur will reveal the fact that weed seed production on such areas is many times as heavy as over the rest of the field. Most cereals, if given a chance, very greatly reduce weed seed production by shading the weeds, but the weeds in blank spaces grow to their full size.

BLUE BUR is a particularly bad weed where sheep graze, because of the way in which the "burs" stick into and spoil the wool. The plants mature very rapidly, and often ripen seeds on neglected summerfallows.



Blue Bur

BLUE LETTUCE is a deep-rooted native perennial that is very closely related to the Perennial Sow Thistle, which is a wild lettuce. The flowers are blue. This weed is easily controlled by cultivation.



Blue Lettuce

BUCKWHEAT (WILD) is an annual weed that behaves erratically. In certain seasons (1938, for example) it becomes unusually abundant. It has leaves much like those of Field Bindweed, a very bad perennial; but The Wild Buckwheat

flowers are quite different from those of Field Bindweed, and its seeds are triangular, like tame buckwheat seeds. The seeds are valuable as feed, but should be crushed.



Wild Buckwheat

BURDOCK is an introduced biennial. It has very large leaves, and is sometimes called wild rhubarb. The flowers are purple, and the flowers and seeds are equipped with "fish-hook" like barbs which attach the burs to animals' tails, the clothing of people, etc. The plants are conspicuous, and easily killed by pulling or cutting below the ground.



Burdock

BURY weed seeds in early autumn by LIGHT cultivation.

C ANADA THISTLES spread mostly from roots, though they also grow somewhat from seeds. Their roots penetrate deeply and also project themselves horizontally at about 10 inches deep, sending up shoots for new plants. July plowing, followed by cultivation, is recommended.

CHICKWEED (COMMON) is a low-growing, delicate-appearing, annual weed that grows mostly in gardens, and especially in shaded spots. Above ground its growth is very frail and soft; its roots are fine but tough. Caged birds are fond of its tender leaves and branches. Its flowers are small and white.



Common
Chickweed

it is not a pasture plant. It vanishes with cultivation.

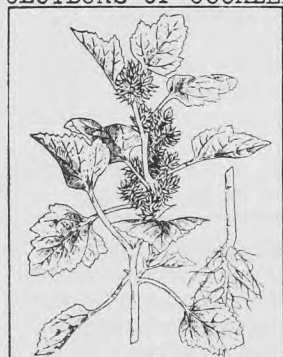
CLEAN SEED is the only proper kind to sow.

CINQUEFOIL (ROUGH) is one of several native cinque-foils (or Potentillas) that grow in Manitoba. This particular one crowds into over-grazed and worn out pastures rather badly, and



Rough
Cinquefoil

CLOTBURS or COCKLEBURS are very coarse-leaved annuals, which grow about 12 to 18 inches high. They produce hard, spiny growths in which the seeds are produced. Fortunately, the plants are not numerous.



Clotbur

CONTROL of weeds can never be achieved by plowing down plants that have formed seeds. These simply ripen and grow in later years. Destroy weeds before they form seeds.

COUCH GRASS and Quack Grass are the same weed. If interested, write to this department for a cir-

cular on this weed.

CRESTED WHEAT GRASS is reported to be very effective as a smother crop for perennial weeds.

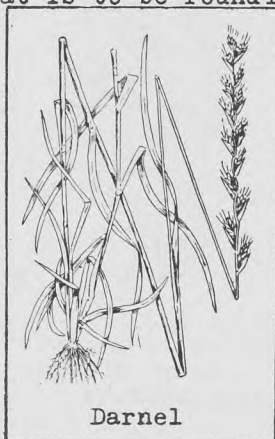
CUTTING the tops off perennial weeds may delay seed ripening; but otherwise it is about as effective as winking in the dark---you know you do it, but that's all there's to it. Use thorough tillage methods on perennials.



Quack or Couch
Grass

DANDELIONS do not stand tillage well, and are seldom bad in cultivated fields in Manitoba, though they are often very bad in lawns and sometimes in meadows. They cannot withstand summerfallowing. Where they FILL lawns, the easiest control is secured by digging or plowing the lawn in April, working out all the roots and reseeded at once with good clean lawn grass seed. Annual reseeding of any lawn in early May, together with fertilizing, so as to keep the grass thick, goes a long way toward dandelion control. After a long, heavy rain (say 2 inches) the entire root of a dandelion can be pulled by hand.

DARNEL is a grass-like annual weed that is to be found in small quantities in some districts in Manitoba. It grows about one foot high. Its seeds are very difficult to separate from grain, and are said to be somewhat poisonous. Control is as for Wild Oats.



Darnel

DOCKS sometimes are very persistent perennials and will endure much summer-fallow cultivation before being killed.

DODDER is a parasitic weed. It is one of the worst pests in alfalfa and clover crops, and is legislated against in almost every country in the world. It is increasing in Manitoba. Dodder preys upon other plants by twisting itself about them, sending its rootlets into their living tissues, draining them of their sap, and often killing them. Spray the patch with coal oil and burn everything, especially the Dodder seeds on the ground.

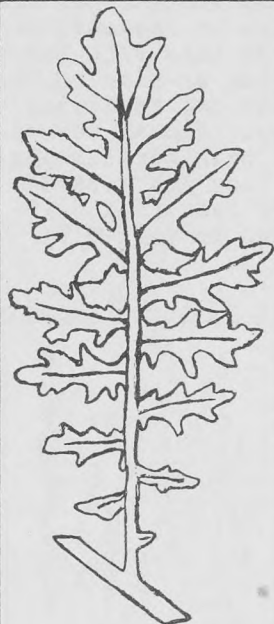


Dodder



Curled Dock

DOG MUSTARD is a relatively new mustard in Canada. It is spreading rather rapidly in Manitoba. It continues to grow after the crop is cut, and will sometimes fill a field with bloom in September. Early fall tillage is recommended. If interested, write the department for a circular on this weed.



Typically Shaped
Leaf Of
Dog Mustard

DORMANCY is a characteristic of many weed seeds. That is, some seeds that are capable of growing will refuse to do so even under the most favorable conditions at any one time, but may grow later under similar circumstances.

DRAGONHEAD (AMERICAN) is a native annual with a coarse appearance which is not often found in fields, but frequently observed about farm buildings and in odd spots. It belongs to the mint family of plants.

DRILLING without "misses" is extremely important in weed control. Weeds grow much more profusely in uncropped spots than in the remainder of the field.

E RADICATION of many weeds is very difficult after they have become well established; but intelligent treatment can work wonders. Here are some of the questions to which one should find answers: 1. What is the correct name of this weed? (If in doubt, send a specimen plant for identification to the Dominion Botanist, C.E.F., Ottawa, or to the Weeds Commission, Manitoba Department of Agriculture, Winnipeg.). 2. Is it an Annual, Biennial or Perennial? 3. When do its seeds ripen? 4. When do they grow? 5. Does it spread by root? 6. From how deep will the seeds grow? 7. What are its weak points?

EVERY Weed has its weak points. Success in weed fighting is dependent upon knowledge of the habits of the weeds.

F ALSE RAGWEED has increased considerably along Manitoba roadsides and about towns during recent years. It is an unsightly weed, almost as rank sometimes as the Russian Sunflower. If interested, write for a circular regarding this weed.

FANNING mills, properly used, are very valuable. Some farmers fail to use them in preparing their seed grain.

FLIXWEED is a very fine-seeded plant of the mustard tribe which is increasing in many part of Manitoba. It is a winter annual; that is it grows a very small seedling in the fall and comes on the following spring. The leaves are very finely divided, and the plant is usually mistaken for Tansy Mustard. Spring cultivation is recommended.



Flixweed

FOXTAIL, or Wild Millet, is an annual weed that during the past twenty years has been spreading from the south northward in Manitoba. It is a very quick-growing annual, and sheds its seeds within a few weeks after it starts life. Control is limited to the early summer months, when the young plants can be destroyed.



Foxtail

GERMINATION in early spring is more prompt on the part of cultivated cereals than it is with most of the annual weeds. This gives the cultivated crops a very distinct advantage, as the tallest plants in any field have much advantage over the others entirely out of the fact that they tend to smother the shorter stemmed plants. Therefore, other things being equal, early sown crops offer the greatest advantage in weed control.

GREAT RAGWEED causes considerable loss in Eastern Manitoba. It is an annual weed that is native in the Red River Valley and southward through the U.S. The seeds are separated from wheat only with difficulty, though they are lighter and may be somewhat blown out with a very strong blast or floated out with a "pickler" that uses a water solution for smut treatment. In certain years heavy losses occur on some farms through grain being "rejected" because of this weed. The plants are conspicuous, and could often be pulled from wheat fields to save the loss of grade. If interested, write the Department for the circular "Great Ragweed".



Great Ragweed

HARE'S-EAR MUSTARD is not often a serious field weed, but sometimes becomes quite prevalent. Treat as for Common Wild Mustard. Write for circular "Stinkweed and Common Wild Mustard".

HAY in the rotation is very effective in controlling weeds. Consult "Rotations".

HEADLANDS that are seeded to a good grass and clover mixture and mown for hay are a protection against the intrusion of weeds.



Hare's-ear Mustard



Hoary Cress

HEMP is now outlawed in Canada under a Dominion statute. This includes the ordinary field hemp.

HOARY CRESS, sometimes called Whitetop, is a very aggressive, white-flowered, deep-rooted perennial which has been found in a few places in Manitoba. It is one of our worst weeds. It would pay to take great pains to exterminate any patch. If interested, send for the Department's circular on this weed.

HORSETAIL is the name of a jointed Christmas-tree-like perennial native plant that grows about ten inches high in some of the heavier and moister soils of Manitoba. The sections of the plant are fitted together like stove-pipes, and they will pull apart at the joints, which are about half an inch apart. The plant is said to be indigestible and even poisonous, and to cause scouring of animals. It is particularly prevalent about the slope and

foot of the Riding and Duck Mountains, but is widely distributed. The stem at the right of the picture appears in May and bears spores; the branched growth develops later. Summer tillage is recommended.

I DENTIFICATION of weeds is furnished free by the Manitoba Weeds Commission. Send a good sized section of the plant. Be sure that your name and address is in or on the same parcel.

IMPLEMENTS that are kept tight and sharpened do more and better work with less power than can be done by dull ones. Always clean implements of all roots and trash before moving from field to field.

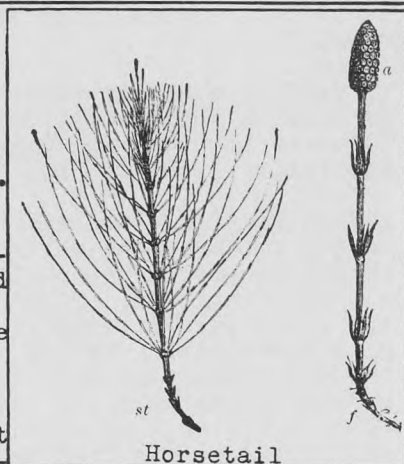
INTEREST in weeds has risen rapidly during the past ten years in all parts of North America. The idea that ordinary "mixed farming" of the old-fashioned kind, (though good in itself) would automatically chase away all weeds, irrespective of their kind, is proving to be a fallacy. Weeds are as individualistic as are other creatures; and nothing takes the place of specific knowledge of the habits of the kinds of weeds that are in YOUR OWN field. Action should be based on such knowledge.

J ULY suns are usually hot and very quickly kill the roots of perennial weeds if they are then turned up to the sun. Killing of exposed roots is much more rapid in hot weather than in the cool spring or fall.

JUNEWEED is a low spreading native annual which sometimes crowds fields of grain rather badly. It grows very quickly, and does most of its harm in June.

K NAPWEED (Russian) is a deep-rooted perennial which is still very scarce in Manitoba. It has lilac-colored flowers. The foliage is spare. The treatment is about the same as for Canada Thistle. Incipient plots should be completely stamped out by treating with sodium chlorate or by very thorough tillage before this weed becomes established.

KNOTWEED, or Doorweed, is the name of the prostrate, or half prostrate, plant that grows about paths, in school grounds, and in other places where there is much tramping. It is rather a helpful plant as it covers many areas that otherwise would be bare; but it succumbs easi-



Horsetail

ly to cultivation. The seeds are much relished by sparrows.

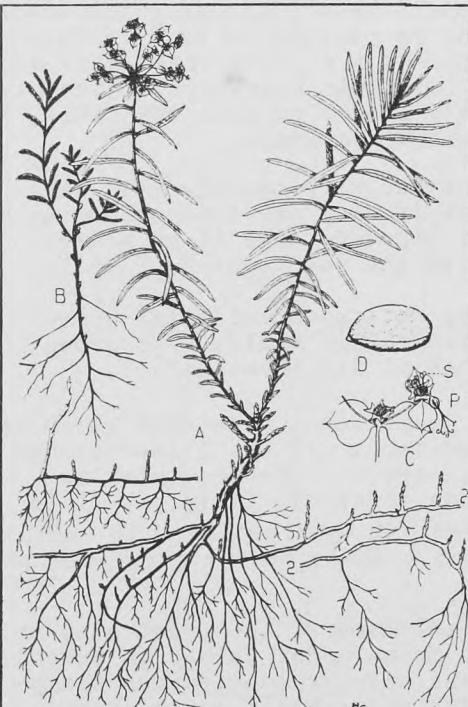
L ABORATORY services, in the way of examination of seed samples and identification of weed seeds, are provided by the Dominion Government at the Dominion Seed Laboratory, Dominion Public Building, Winnipeg.

LAMB'S QUARTERS, commonly called "Pig-weed", is an annual which causes much loss. The seeds are easily screened out of seed grain. Those shelled in the field germinate early, and the plants are easily killed when young. The tiny seedlings can be killed by harrowing the emerging crop. Dry seasons favor this weed. This is a wild spinach, and is often cooked for "greens".



Lamb's Quarters.

LEAFY SPURGE is a deep-rooted perennial which is exceedingly hard to eradicate. It is spreading in Manitoba, and has ruined some farms. One of the most distinctive traits is its profuse milky sap. Incipient patches should be killed by chemicals, and larger plots summerfallowed for two successive years. If interested, write this Department for our circular on Leafy Spurge.



Young Leafy Spurge Plant

LEARN the correct names of the weeds by having them identified. Progress depends in part upon knowledge.

LIVE STOCK farming generally tends toward weed reduction.

LOSS--The annual weed loss in Canada is estimated at about 75 million dollars. For the Prairie Provinces the loss is put at over 43 million dollars. This covers simply the direct damage done to crops. This estimate is made by Dr. Hopkins, of the Experimental Farms.



This farmer
is hunting
for his house
and barn.



The Thicker
the weeds,
the Thinner
the Sheaves.



Yes! Canada
Thistles
feel quite
at home in
Manitoba.

MALLOW (ROUND-LEAVED) has spread about many of our towns. It is a flat growing weed with roundish leaves and mauve-colored flowers.

MANURE, if thoroughly heated, contains no viable seeds. Unrotted manure may contain great numbers of them.

MAYWEED is a short annual which is very widespread in Ontario, and which is creeping into Manitoba towns and villages.

MILK and butter are often tainted by Stinkweed. The remedy is not to stop drinking milk or eating butter, but rather to stop growing Stinkweed.



Round-Leaved Mallow

MUSTARDS are a very numerous family. Possibly one could gather nearly a score of different species in Manitoba. Most of them are true annuals. Wild Mustard has been the worst of these, but Dog Mustard may yet be as bad.

NETTLES are not serious field weeds, but they should be destroyed wherever found.

NIGHTSHADES are native plants of the tomato tribe which bear small tomato-like fruits. Nightshades generally are said to be poisonous. They are not serious weeds in Manitoba, but for the sake of the safety of children they should be destroyed.

"NOXIOUS WEEDS ACT" is a law passed by the Manitoba Legislature. Its provisions are mostly intended to cope with the evils of living weeds, rather than to regulate the seed trade, which is covered by Dominion legislation. The "Noxious Weeds Act" of Manitoba extends quite wide powers to the municipal councils in their relation to the menace of growing weeds.

ORACHE is the correct name (seldom used in Manitoba) for several plants related to the Lamb's Quarters and which generally pass as "pigweeds".

OX-EYE DAISY is a serious though attractive meadow weed in the eastern provinces. It occurs in spots in Manitoba, but has always been a minor weed. It cannot stand tillage, but there is a possibility of its increasing significantly in grass lands.



Ox-Eye Daisy

PASTURES often wear out, and when they do they usually become full of weeds. Drought and close grazing hasten this condition rapidly. There are many pastures in Manitoba that should be broken and re-seeded. Manuring failing pastures will invigorate the grass and so give less foothold for weeds.

PATCHES which are particularly weedy should be mown out of the grain fields about July 1st and made into hay or ensilage. This is much better than to let weed seeds ripen and scatter.

PENNYCRESS is another name for Stinkweed. Like the rose, "by any other name it smells as sweet!"

PEPPERGRASS, a native winter annual, is most abundant on light soil. Kill in the early spring.

PERENNIALS are many-year plants, frequently quite deep rooted. As a rule they cannot be handled successfully by spring and fall cultivation only, but demand cultivation during midsummer.

PHOSPHATE fertilizer, if drilled in with the seed, will help control weeds by giving the grain crop a better chance to outgrow and smother them. This is true because most cereals germinate at lower temperatures and therefore earlier than do the weed seeds. Thus they are well on their way when the weeds start.

PLANTAIN is a troublesome lawn weed. It is a native perennial.

POISON IVY. Poison Ivy is not a field weed; but should be known by every-

one because of the severe contact poisoning suffered by folk who touch it. It is a short (2 ft.) native shrub bearing three-lobed waxy looking leaves. If touched, it is apt to produce very serious blisters which are difficult to cure.



Common Plantain



Poison Ivy.

POPPY (of Flanders Fields fame) has been brought to and started in some parts of America, including Manitoba. It is a weed in Europe. Don't sow it here. There is little reason to think that it would be less serious here than in Europe.

POVERTY WEED is a deep-rooted native perennial weed which has given much trouble in some parts of the Canadian West. Though present in a few places in Manitoba, its occurrence in this Province is only rare. In these places it resists cultivation stubbornly. Fortunately, it spreads only slowly. It seems to be found mostly in heavy soils toward the western side of the Province.

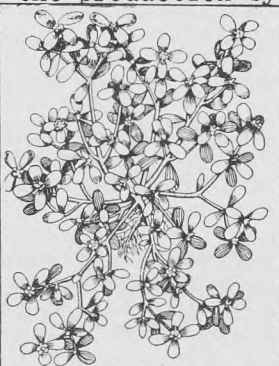


Poverty Weed.

PRICKLY LETTUCE looks much like Perennial Sow Thistle, but has a row of spines down the under side of the mid-ribs of the leaves. It is not a serious pest.

PROLIFICNESS in seed-bearing characterizes most weeds. One observer in Saskatchewan refers to the production by a single Wild Mustard plant of 21,400 seeds and of a Tumbling Mustard bearing 440,600 seeds.

PURSLANE is a wild annual form of portulaca which is especially bad in gardens. It grows quite flat on the ground, has fleshy stems, tiny yellow flowers, bears very fine seeds and wilts or dies with extreme slowness even when hoed off. It is a warm weather plant.



Purslane.

Q QUACK GRASS ripens its seed from about July 8th onward. Hay containing

this weed--and some fields have considerable--should be cut quite early, so as not to spread the weed by the seeds. Once started, the maturing of seeds is rapidly effected. The hay, if cut before July 4th, is safe to use. Write to the Department for a copy of "How to Kill Couch Grass".



Quack Grass.

QUARRELS among neighbors often grow out of the distribution of weeds from farm to farm. This is one of the greatest reasons for weed laws, which seek to establish an adequate basis of protection of good and careful farmers against the indifferent methods of poor farmers.

QUESTIONS sent to the departments of agriculture should help you with many of your weed problems.

RAGWEEDS are widely blamed by the medical profession for causing hay fever among susceptible persons. There are different species of ragweeds in Manitoba. The department has circulars on Great Ragweed and False Ragweed.

RED-ROOT (PIGWEEED) is a rank-growing annual that has a thick red toproot that is very characteristic. It seeds prodigiously. It is rather more of a garden than a field weed. This weed is abundant in Manitoba.

ROADSIDE weeds (to the centre of the right of way) are, according to the law, the responsibility of the occupant of the land alongside.

ROOT SYSTEMS of all plants are very much more extensive and elaborate than the average person supposes. In 1934 T.R.Pavlychenko, in weed research at the University of Saskatchewan, found that wild oat roots had gone down to over 5 feet deep, and that single plants had developed as much as 3,400,000 inches of root. This is more than 53 miles! Unbelievable, isn't it! Spring rye plants had ten-elevenths as much, and Marquis wheat five-sixths as much root measurement. This means that shortly after the crop and the weeds start to grow in a field the whole fabric of soil becomes an intricate mass of competing rootlets and root-hairs and that the fight for moisture and plant nutrients is a battle royal. It is in the soil, where no farmer can see what is happening, that the weeds do most of their damaging work. In fact, the roots of the grain plants and those of the weeds have met in competition before the above-ground growths have begun to compete. Weed roots have great facilities for extracting moisture from the soil, and in many fields steal as much as the crop is able to secure.



Red-Root(Pigweed)

ROSES (WILD) are very persistent in Southern Manitoba. Thoroughness of cultivation is necessary to their control.

ROTATIONS of crops in which hay or hay and pasture occur are particularly advantageous in weed control. Here are some rotations used on the Dominion Illustration Stations in Manitoba: 3-year rotations--(a) Corn, grain, clover; (b) Fallow, grain, clover; (c) Clover hay, grain, grain; (d) Clover, grain, corn; 4-year rotations-- Fallow, grain, clover, grain; 5-year rotations--Fallow, grain, hay, grain, grain; 6-year rotation--Fallow, grain, hay, hay, grain, grain; 8-year rotation--Fallow, grain, hay, grain, hay, pasture-breaking, grain, grain.

RUSSIAN THISTLE is fully dealt with in a circular published by this department. If interested, send for a copy.

SEED grain and grass and clover seed cannot be too scrupulously cleaned before sowing.

SEED PLOTS that have been made as nearly weed free as possible are wonderfully fine places to grow the seed for use in your fields.

SHALLOW TILLAGE is more effective than deep tillage (on the basis of cost) for the control of annuals and biennials, and also for some of the perennials. According to experiments conducted by the Field Husbandry Division, Central Experimental Farm, Ottawa, twelve cultivations to a depth of two inches were required to eradicate perennial sow thistle. Ten cultivations to a depth of six inches eradicated a similar stand of the same weed. It is pointed out, therefore, that there was a saving of only two cultivations when the depth of cultivation was three times as great.

SHEEP are the finest weed eradicating animals we have.

SHEPHERD'S PURSE is more of a garden weed than a field weed. It has triangular shaped seed capsules. Treatment somewhat like that for Stinkweed.

SMALL-SEEDED weeds will seldom send their seedlings through more than about 2 or 2½ inches of soil, and they are, therefore, more apt to lie dormant in the ground than are large seeds.

SMALL SEEDS, such as grasses, clovers and alfalfa, are more likely than are larger farm seeds to carry weed seeds, because of the difficulty of removing the weed seeds that so often are of a similar size. Therefore one should use only high grade seed, when sowing such crops.

SODIUM CHLORATE is one of the most effective chemicals known for the killing of weeds. The cost (about \$50.00 per acre or more) prohibits its use on anything more than small patches, which means that its use is practical only to kill weeds new to the farm where used. "Atla-cide", manufactured in Winnipeg, is largely composed of



Russian Thistle



Shepherd's Purse

this chemical and acts in much the same way.

SOIL DRIFTING is an exceedingly serious problem in all cases where a persistent perennial weed has to be summer-fallowed for a long time (as for Leafy Spurge, Hoary Cress or Field Bindweed). In such cases, soil erosion may be reduced somewhat by planting rows of Russian sunflowers or some similar wind-breaking crop lengthwise through the area being worked, then later working the weeds out of the strips so occupied. (In other words, a type of "strip farming".)

SOW THISTLE, a wild lettuce which is one of Manitoba's bad weeds, is carefully dealt with in a circular procurable from this department. If interested, send for a copy.



Sow Thistle

SPURGES present in Manitoba consist of at least four types. The worst is Leafy Spurge. (The department has a circular on this one.) Ridge-seeded Spurge is a prostrate rather small annual that has multiplied considerably, especially in worn-out pastures. The others are quite unimportant.

STINKWEED causes heavy loss to dairymen by ruining the flavor of butter. If interested, ask this Department to send its circular "Stinkweed and Common Wild Mustard".



Stinkweed

SUCCESS in weed fighting, on the part of any farmer, is a real asset to his whole community, because others following the same methods should also secure the same satisfactory results.

SUMMERFALLOW treatment should almost always begin right after harvest the fall before. If the soil is lightly cultivated, then living plants such as Russian Thistles and Dog Mustard, which grow so fast and ripen so many seeds after harvest, are mostly prevented from doing so. Also one assures early spring germination of Wild Oats, Pigweeds and other annual weed seeds, which in undisturbed stubble ride over ungerminated until the next June, and then refuse to germinate in the hot, dried fallow soil, only to grow prodigiously the year following.

SUNFLOWER is the name commonly applied to at least three entirely different native weeds in Manitoba. In the south-western corner of the Province is the rather wide-

ly branching Many Flowered Prairie Sunflower or (Maximilian's Sunflower), which ranges southward. Northward is the Black-headed Sunflower. Along the east side of the Riding Mountain, and stretching out over a good wide area (including some of the Assiniboine Valley) is the Wild Artichoke, a sunflower which grows tuberous growths at its base. This latter is probably the most difficult to eradicate. All succumb to good cultivation.

SUNSHINE is a wonderful ally in killing perennial weeds. It is really not cultivation that kills the roots of plants, but rather it is the exposure of the roots to sunshine and air that exterminates them. The exposure of roots on the ground surface for one hot day in July or August will work as much havoc to them as a week's exposure in the cooler weather of late September or October. This has been proven by definite experiments.



Sunflower

SWEET CLOVER seed is a very serious impurity in alfalfa seed, but, used as a hay crop in the rotation, Sweet Clover may fill an important place in the farm economy.

THE SEEDS ACT is a Dominion law under which the seed trade is regulated in Canada. For a copy write the Plant Products Production Services, Dominion Public Building, Winnipeg.

THRESHING machinery and attendant wagons are required by law to be cleaned thoroughly before leaving one farm to go to another. The operator must carry a printed notice to this effect upon his separator. It is equally as important that all wagons be carefully swept as it is that the separator be cleaned. One should also note that the regulation applies to "combines" as well. In spite of the hurry which always prevails at threshing time, this provision is VERY IMPORTANT.

TOADFLAX is a perennial weed which belongs to the same plant family as the garden snapdragon. The rather attractive blooms are yellow and orange colored. It is less aggressive here than in some of the other provinces. Thorough cultivation should kill it in one season.



Toadflax

TUMBLING MUSTARD sometimes bears a million seeds or more. Yet for some reason it has not increased greatly in Manitoba in the past 20 years.

TWITCH GRASS is yet another name for Quack Grass or Couch Grass.

UNDERGROUND, many weed seeds will live for very long periods. The United States Department of Agriculture found that of 107 kinds of weed seeds buried in 1902 51 kinds grew when dug in 1923, twenty-one years later.



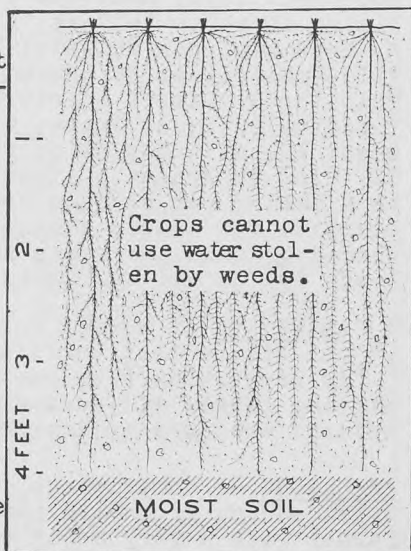
Tumbling Mustard

USE weeds in every way that produces profit without danger of further damage. For example, quack grass fields can be safely and profitably pastured. The hay from this plant can be safely used if cut by July 4th. Wild Oats can be safely cut for hay just up to the time of the very earliest heading, and only for one or two days afterward. Sow Thistle makes good pasture if closely cropped. Almost any weed can safely be used in ensilage; and even Canada Thistle makes good silage. Most weed seeds can be safely fed to animals if boiled or ground. It is better not to grow weeds; but if they are present, try to turn them into dollars.

VIABILITY is retained by some weeds even though buried for decades in the soil. With other species it is quickly lost.

WATER is a first requisite of crops. In an area where rainfall is more often scant than over abundant, as in Manitoba, anything that robs soil of moisture is of more than usual disadvantage. Weeds steal very large amounts of water. It is below the ground level that weeds wage their greatest war with the crops.

WATER HEMLOCK is a coarse, rank native plant of the parsnip family that grows in low spots and is sometimes blamed for poisoning animals, especially cattle, which may pull them up by the roots in the spring. The plants bear white flowers during the summer.



"WEEDS AND WEED SEEDS" is a well illustrated, well written booklet on Canadian weeds that is procurable from the Publicity and Extension Branch, Department of Agriculture, Ottawa. It is sent free. Every Manitoba farmer should send for a copy.

WILD MUSTARD and Wild Oats develop root systems that compete very aggressively with the roots of cereal crops. The competition of these weeds, where the eye cannot see it, is much greater than the visible competition above the ground level.



Wild Mustard

the bottom seed is ripe the top grains may have fallen to the ground. If cut four days after heading, some of the grains will be germinable.

WORST WEEDS in Manitoba: From the standpoint of actual, present-day, dollars and cents loss, Manitoba weeds may be listed about as follows: 1, Wild Oats; 2, Perennial Sow Thistle; 3, Common Wild Mustard; 4, Stinkweed; 5, Canada Thistle; 6, Lamb's Quarters; 7, Russian Thistle; 8, Quack Grass; 9, Great Ragweed; 10, Wild Millet or Foxtail; 11, Red-root Pigweed; 12, Wild Buckwheat. (The relative rating of these weeds is a matter for decided dispute). As to potential possibilities for future damage some of these would be displaced by such newcomers as Field Bindweed, Hoary Cress, Leafy Spurge and Dog Mustard.



Water Hemlock

WILD OAT plants require about $2\frac{1}{2}$ weeks to mature all the seeds from the top to the bottom of the panicle. Long before



Wild Oats

XAMINATION of weeds, on one's own account, furnishes one of the best short courses possible. The tuition is free. Learn to use your own eyes--yes, and a magnifying glass, if you can secure one. It is truly marvellous what may be learned through examination of plants.

'XCHANGES of compliments, mutual but not always quotable, often escape from both parties to the transaction when a farmer with a very weedy crop to deliver receives the report on dockage which the elevator operator presents for

his perusal and consideration. Irrespective of what the calendar says, this is often a good time for a New Year's resolution.

'XTERMINATION is the correct treatment to give all new weeds when they first intrude on your farm.

YARROW is a white-flowered (occasionally light mauve) perennial that grows in sod, but that will not withstand cultivation.

YOU value good neighbors who try to keep their fields free from weeds. Well, you yourself are neighbor to these other fellows. Even from the standpoint of your own standing in the community, and your friendship among other men, it will pay to keep weeds down to a minimum.

YOUTH is blessed with keenness of mind and sharpness of eyesight. It is always a matter for congratulation when the farmer of tomorrow has learned to be the weed observer of today.

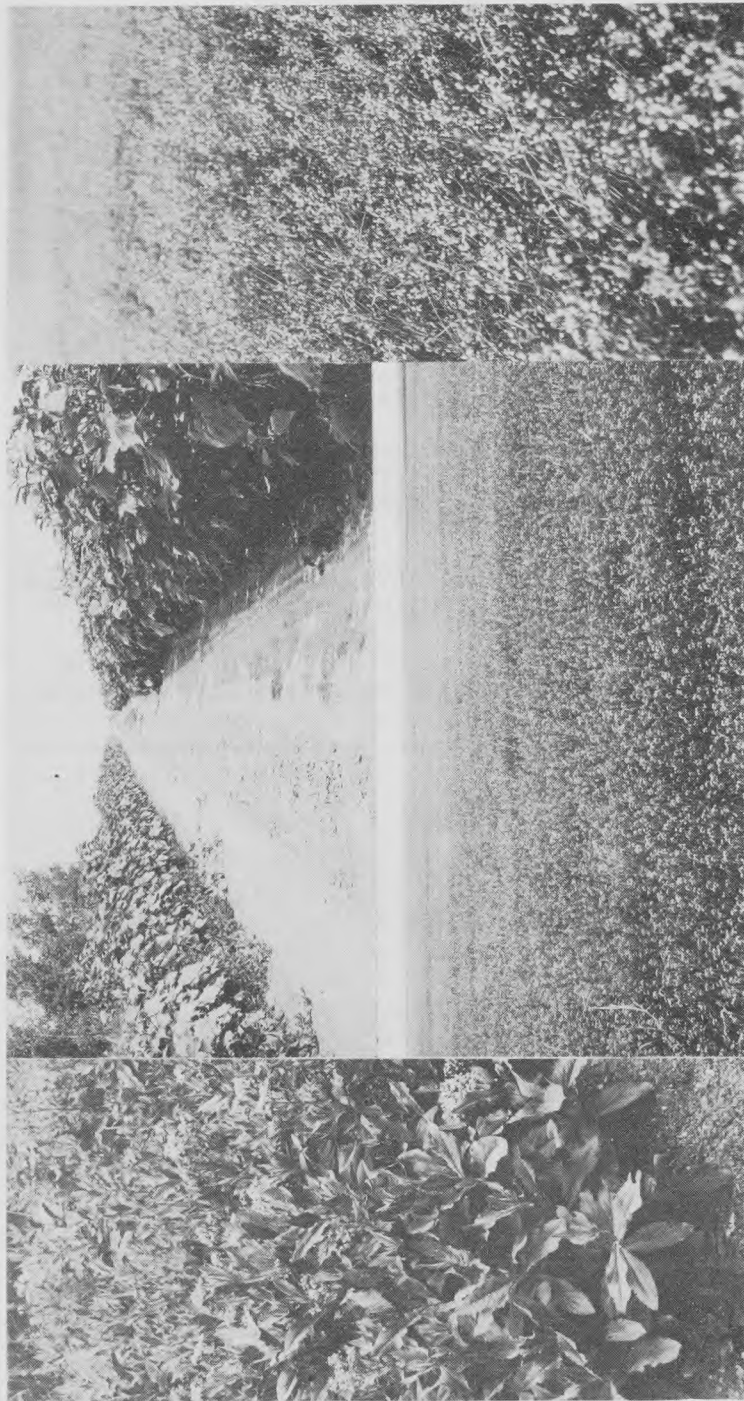
ZEAL in cleaning the seed grain should never be allowed to lag. It is the first element in weed prevention.

ZIG-ZAG drilling is always an encouragement to weeds, which always take advantage of every unseeded space in the fields.

OTHER LITERATURE ON WEEDS AVAILABLE FROM THIS
DEPARTMENT AT TIME OF PUBLICATION
OF THIS BULLETIN.

Control of Wild Oats	Leafy Spurge
How to Kill Couch Grass	Hoary Cress
The Canada Thistle	Stinkweed and Common
Sow Thistle Control	Wild Mustard
Dodder	Poster on Four Perennial
Dog Mustard	weeds: Leafy Spurge,
False Ragweed	Hoary Cress, Field
Great Ragweed	Bindweed and Bladder
The Russian Thistle	Campion.

For a copy of any of the above, address:
Publications Branch, Manitoba Department
of Agriculture, Winnipeg, Canada.



PHOTOS

On the Left -- A Manitoba Plot of Hoary Cress.
 Top Centre -- False Ragweed lines many Rural Roads.
 Bottom Centre--Dog Mustard Fills a Stubble Field after Harvest.
 On the Right --A Quarter Section full of Bladder Campion.